

Project Workplan: Reducing Uncertainty Through Enhanced BMP Effectiveness Data

Submitted to:
State Water Resources Control Board

Submitted By:
Southern California Coastal Water Research Project

Date:
April 13, 2018

Agreement Number:
16-033-250

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Background

Reasonable Assurance Analysis (RAA) is predicated on estimating the effect of future management actions. One element of the RAA estimation is predicting the volume and/or pollutant reduction effectiveness of structural and non-structural best management practices (BMPs). Imprecision or inaccuracies in BMP performance data can lead to uncertainty in RAAs.

Inaccurate BMP effectiveness estimates can be attributed to inappropriate evaluation methods, inadequate BMP sample size, and/or outdated performance monitoring data, amongst others. Currently, most RAA models simulate BMPs based on existing effectiveness data from other studies such as the International BMP database (<http://www.bmpdatabase.org/>). Unfortunately, even with this information resource, existing data are rarely region specific where factors such as climate, geology, and/or design specifications are similar to the RAA application. To compound this uncertainty, median or average BMP effectiveness values are often utilized when effectiveness may range one or more orders of magnitude based on multiple factors including BMP design, rainfall intensity or volume, influent concentrations, and/or maintenance operations.

Objectives

The goal of this project is to update the information on BMP effectiveness for RAA applications specific to the various regions of California. The product from this project will be a compilation of region-specific BMP effectiveness data, then providing public access to the median and distribution of these BMP effectiveness data for inclusion in RAA modeling of future scenarios. Where data gaps exist, either new data will be collected, or a workplan for future data collection will be created.

To accomplish the objectives, this project will consist of four tasks: 1) Review and decide what structural and non-structural BMP data should be compiled; 2) Compile and collect California-Specific BMP Effectiveness monitoring data; and 3) Update effectiveness for RAA application, and; 4) Make BMP effectiveness data publicly available.

Tasks and Deliverables

Task 1: Review what structural and non-structural BMP data will be compiled

The contractor shall review various structural (i.e., detention, infiltration, and treatment) and non-structural (i.e., street sweeping, public education, etc.) to decide which BMPs are most important for effectiveness assessment to reduce uncertainty in RAA process. Criteria for selecting BMP types will be created using input from the SWRCB and subject matter experts.

The contractor will prioritize what method(s) should be used for BMP effectiveness assessment. For example, several BMP effectiveness endpoints exist in the literature including effluent concentrations, percent load reductions, or efficiency curves. The contractor shall evaluate these methods to identify their relative strengths, weaknesses, and suitability for California. Finally, this task will describe which effectiveness approach(es) will be collated for the final product.

Task 1- Deliverables:

- 1.1 Criteria for BMP selection including a prioritized list of BMPs most important for RAA
- 1.2 A comparison of the existing BMP effectiveness assessment methods, and the optimal method to be used for data compilation

Task 2: Compile California-Specific BMP Effectiveness monitoring data

To complement the International BMP Database, the contractor will compile statewide effectiveness data (and necessary metadata) for BMPs selected from Task 1. At a minimum, the contractor will target data from SWRCB Water Bond grantees (i.e., Props 13, 50, 84, 1), local bonds (i.e., Prop O), and local stormwater implementation projects from TMDL or NPDES requirements (particularly in Regions 2 and 4 where RAA is most mature). Data for both stormwater volume reduction and pollutant concentrations should be compiled to adequately represent all BMP categories chosen in Task 1. If no representative datasets are available for a specific BMP type, the contractor may conduct field-experiments to develop the dataset, if sufficient funds exist.

The contractor shall inspect, analyze, and validate the data sets to ensure accuracy and completeness. Flow and/or volume will be critical parameters. Water quality parameters may include total suspended solids, fecal indicator bacteria, nutrients, and heavy metals. Cost data will also be considered.

Task 2- Deliverables:

- 2.1 A compiled dataset of statewide BMPs for runoff flow, volume, and pollutant concentrations.

Task 3: Update effectiveness data for RAA utilization.

The contractor shall use the compiled statewide data to estimate the effectiveness of different stormwater BMPs based on the methods selected from Task 1. In addition, BMPs effectiveness will be compared across the different regions of the state to assess intra-regional differences that can potentially confound BMP effectiveness. The contractor should identify and recommend methods for future data collection where BMP effectiveness data are limited.

Task 3- Deliverables:

- 3.1 A distribution of expected volumetric reduction and pollutant reduction efficiency of BMPs in various regions of California

Task 4: Make BMP Effectiveness Data Publicly Available.

The contractor shall make the compiled statewide BMP effectiveness data publicly available for use in future RAA. Several options exist including adding the compiled data to the stormwater international database, the California Environmental Data Exchange Network (CEDEN), California Water Quality Information System (CWIQS), California Stormwater Quality Association's (CASQA's) upcoming online

tool for Program Effectiveness, or a new Open Data platform. The decision for optimal public facing data will be made following task 1 in consultation with the SWRCB.

Task 4- Deliverables:

- 4.1 Final deliverable: Data delivery to SWRCB. (SWRCB will coordinate for uploading data to the public facing web site, including metadata.)

Project Timeline

Task#	Task Description	Completion Date	Contract Task#
0	Workplan for Enhanced BMP Effectiveness Data (this document)	Complete	2.1
1.1	Priority list of BMPs for RAA	June 30, 2018	
1.2	Review of existing methods BMP effectiveness assessment	Sept 30, 2018	
2.1	Draft Final BMP performance monitoring dataset compilation	Nov 30, 2018	3.1
	Final BMP performance monitoring dataset compilation	Mar 31, 2019	5.1
3.1	Draft Distribution of volume and pollutant reduction efficiencies for various BMPs	Nov 30, 2018	4.1
	Final Distribution of volume and pollutant reduction efficiencies for various BMPs	Mar 31, 2019	5.1
4.1	Final deliverable: Data delivery to SWRCB	Mar 31, 2019	5.1
	SWRCB Work Task: Data upload to public facing web site	TBD	